

Service Manual



ORDER NO.
RRV1346

FM/AM DIGITAL-SYNTHESIZER TUNER

F-504RDS

F-504RDS-G

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	The voltage can be converted by the following method.
	F-504RDS	F-504RDS-G		
HBWXX	○	-	AC 230V	AC 240V, *
HEIXK	○	○	AC 220 - 230V	AC 240V, *
HEWZXX	○	-	AC 220 - 230V	AC 240V, *
HZXX	-	○	AC 220 - 230V	AC 240V, *

* : Alter the wiring of the Power-supply block at the primary winding of Power-transformer referring to the "Line Voltage Selection" described in Service Manual.

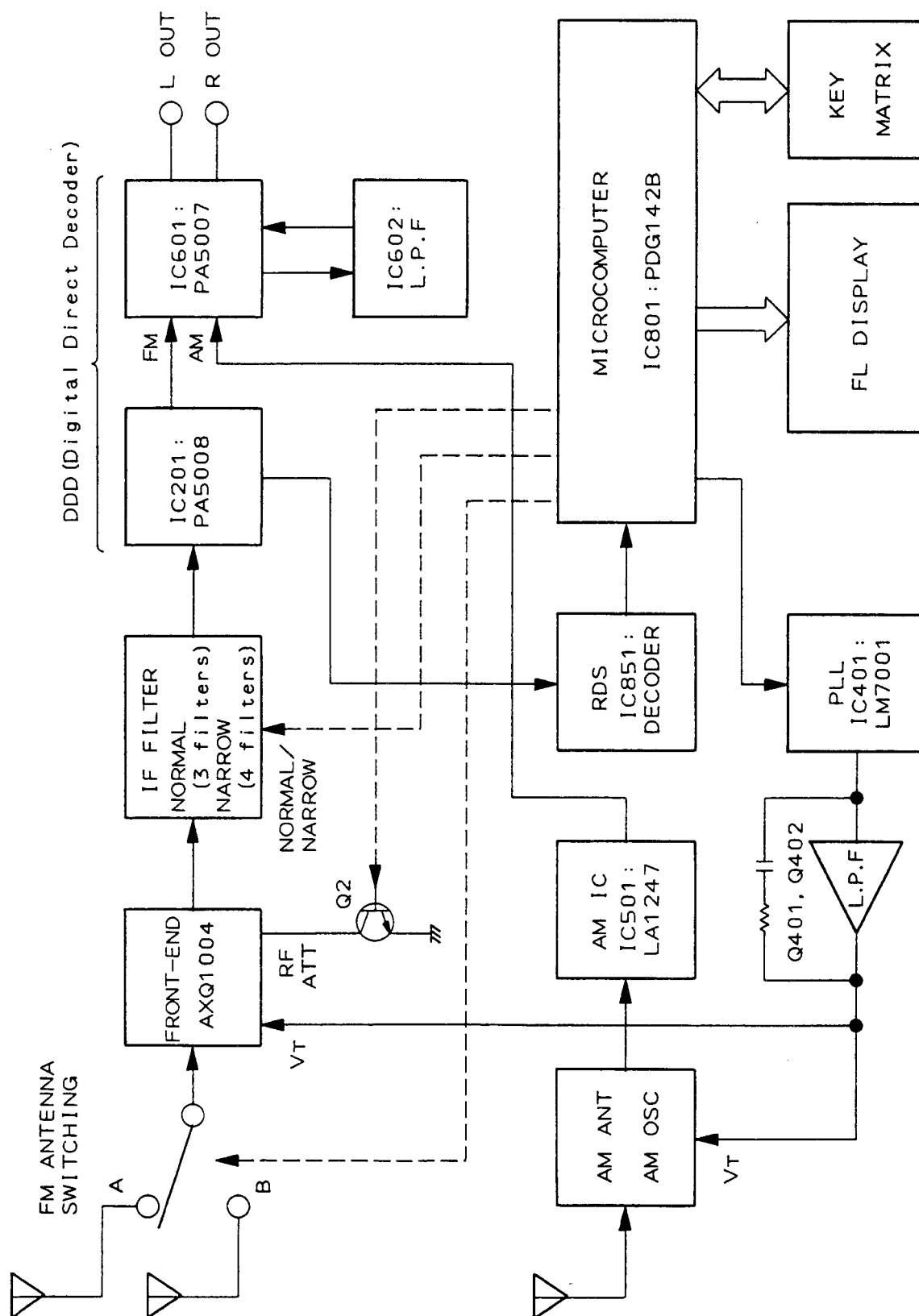
- F - 504RDS - G is the same as F - 504RDS except for color.

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1. BLOCK DIAGRAM



2. PACKING AND PARTS LIST

NOTES:

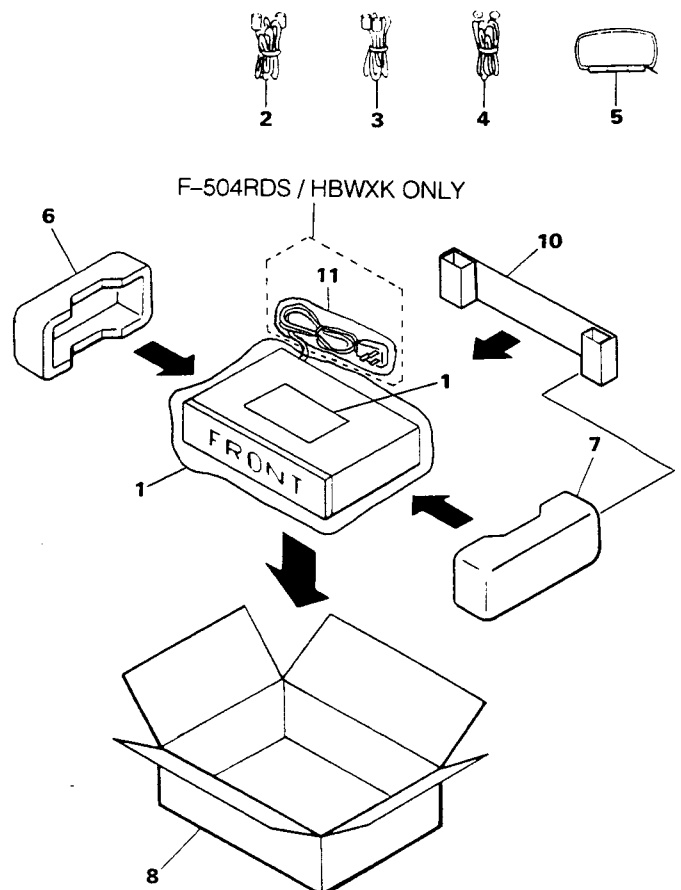
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

■ **CONTRAST OF F-504RDS/HBWXX, HEIXK, HEWZXX, F-504RDS-G/HZXX AND HEIXK**
 F-504RDS/HBWXX, HEIXK, HEWZXX, F-504RDS-G/HZXX and HEIXK have the same construction except for the following :

Mark	No.	Symbol & Description	Part No.					Remarks
			F-504RDS/ HBWXX	F-504RDS/ HEIXK	F-504RDS/ HEWZXX	F-504RDS-G/ HZXX	F-504RDS-G/ HEIXK	
	1	Operating instructions (German/Italian)	Not used	Not used	ARC7048	ARC7048	Not used	
	1	Operating instructions (English/German/French/ Italian/Swedish/Dutch/ Spanish/Portuguese)	Not used	ARE7045	Not used	Not used	ARE7045	
	1	Operating instructions (English)	ARB7044	Not used	Not used	Not used	Not used	
	8	Packing case	AHD7128	AHD7127	AHD7127	AHD7129	AHD7129	
	10	Sub pad (PAP)	AHB1122	Not used	Not used	Not used	Not used	
	11	Air cap	AHG1203	Not used	Not used	Not used	Not used	

■ PARTS LIST FOR F-504RDS/HBWXX

Mark	No.	Description	Parts No.
	1	OPE. INSTRUCTIONS (English)	ARB7044
	2	PLUG CORD (Pin plugs)	PDE1249
	3	CORD WITH MINI PLUG (FOR SR TERMINAL)	PDE1095
	4	FM ANTENNA ASSY	ADH7001
	5	LOOP ANTENNA ASSY	ATB7001
	6	SIDE PAD L	AHA1635
	7	SIDE PAD R	AHA1636
	8	PACKING CASE	AHD7128
	9	PACKAGING SHEET	AHG1107
	10	SUB PAD (PAP)	AHB1122
	11	AIR CAP	AHG1203



3. EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

■ CONTRAST OF F-504RDS/HBWXX, HEIXK, HEWZXX, F-504RDS-G/HZXX AND HEIXK

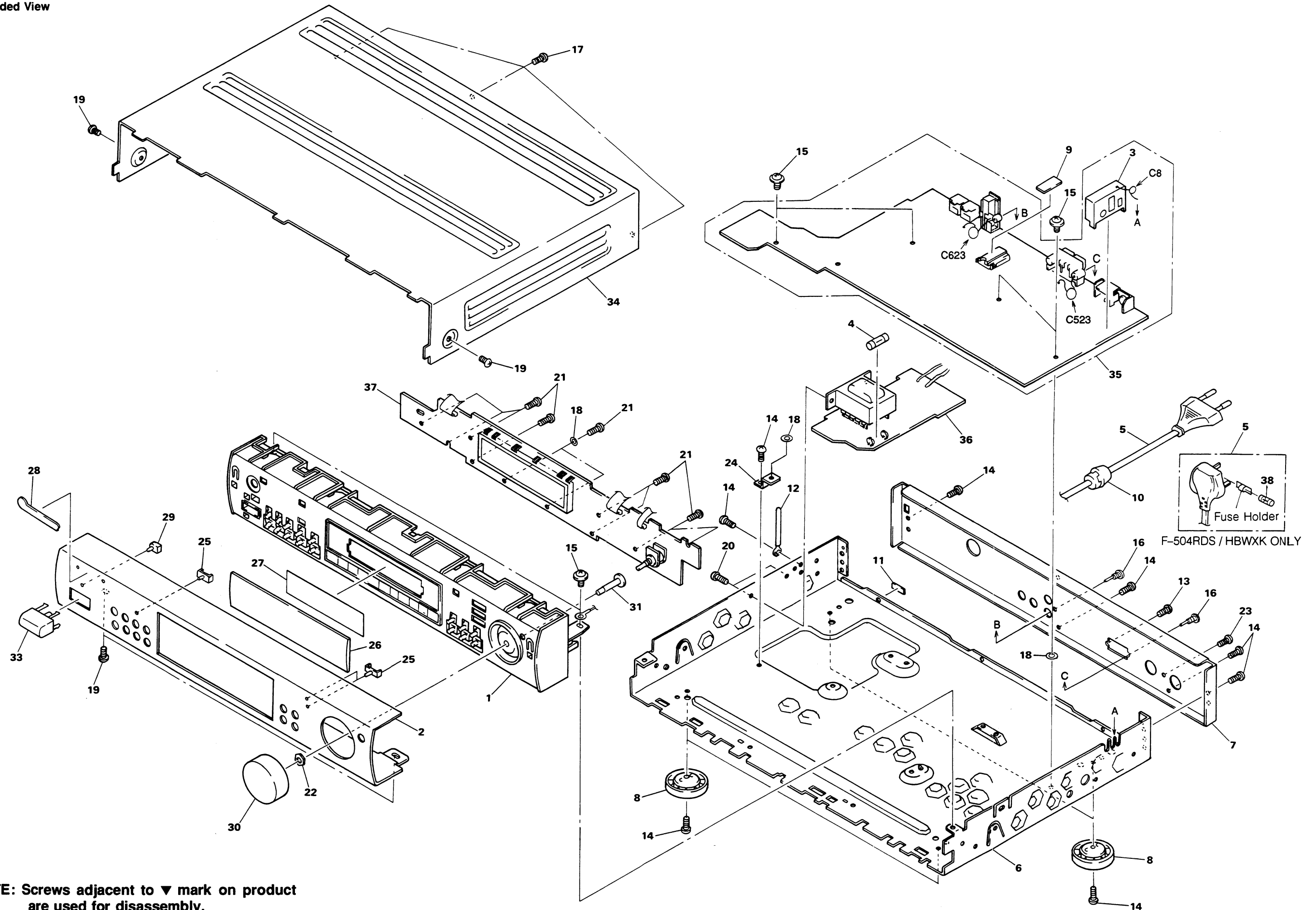
F-504RDS/HBWXX, HEIXK, HEWZXX, F-504RDS-G/HZXX and HEIXK have the same construction except for the following :

Mark	No.	Symbol & Description	Part No.					Remarks
			F-504RDS/ HBWXX	F-504RDS/ HEIXK	F-504RDS/ HEWZXX	F-504RDS-G/ HZXX	F-504RDS-G/ HEIXK	
Δ	1	Panel base ASSY	AMB7268	AMB7268	AMB7189	AMB7269	AMB7269	
	2	Front panel (MTL)	ANB7006	ANB7006	ANB7006	ANB7007	ANB7007	
	5	AC power cord	ADG1148	ADG1138	ADG1138	ADG1138	ADG1138	
	38	Fuse (5A)	AEK1046	Not used	Not used	Not used	Not used	
	7	Rear panel (MTL)	ANC7209	ANC7211	ANC7209	ANC7210	ANC7212	
	19	Screw	BBT30P060FZK	BBT30P060FZK	BBT30P060FZK	BBT30P060FNI	BBT30P060FNI	
	28	Name plate	AAM1058	AAM1058	AAM1058	VAM1051	VAM1051	
	30	Rotary knob M	AAB1344	AAB1344	AAB1344	AAB1346	AAB1346	
	31	KIN button	AAD1682	AAD1682	AAD1682	AAD2469	AAD2469	
	33	Power button (PLS)	AAD2466	AAD2466	AAD2466	AAD2468	AAD2468	
Δ	34	Bonnet (MTL)	ANE1443	ANE1443	ANE1443	ANE1444	ANE1444	
	35	TUNER assembly	AWZ7661	AWZ7661	AWZ7660	AWZ7660	AWZ7661	

■ PARTS LIST FOR F-504RDS/HBWXX

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
Δ	1	PANEL BASE ASSY	AMB7268	NSP	21	SCREW	BPZ26P080FMC
	2	FRONT PANEL (MTL)	ANB7006		22	NUT	NK70FUC
	3	4 SERIAL F.E. MODULE ASSY	AXQ1004		23	SCREW	VMZ30P060FCU
	4	FUSE (T500mA, FU1)	AEK-505		24	PCB HOLDER	ANG1309
	5	AC POWER CORD	ADG1148		25	LED LENS (PLS)	AAK2459
NSP	6	CHASSIS (MTL)	ANA1224	NSP	26	ACRYL PANEL (PLS)	AAK2487
NSP	7	REAR PANEL (MTL)	ANC7209		27	FL FILTER (PLS)	AAK7135
	8	INSULATOR ASSY	PNW1912		28	NAME PLATE (METAL)	AAM1058
	9	CU PLATE	AEF1006		29	LED LENS	PNW2019
NSP	10	STRAIN RELIEF	AEC-882		30	ROTARY KNOB M	AAB1344
	11	SPACER	AED1135	NSP	31	KIN BUTTON	AAD1682
NSP	12	BINDER	AEP-215		32	
	13	SCREW	ABA-298		33	POWER BUTTON (PLS)	AAD2466
	14	SCREW (STEEL)	ABA1009		34	BONNET(MTL)	ANE1443
	15	SCREW (STEEL)	ABA1011		35	TUNER ASSEMBLY	AWZ7661
NSP	16	SCREW (STEEL)	ABA1047		36	POWER ASSEMBLY	AWZ7662
	17	SCREW (STEEL)	ABA1048	Δ	37	DISPLAY ASSEMBLY	AWZ7663
	18	WASHER	ABE-053		38	FUSE (5A)	AEK1046
	19	SCREW	BBT30P060FZK				
	20	SCREW	BCZ30P080FMC				

• Exploded View



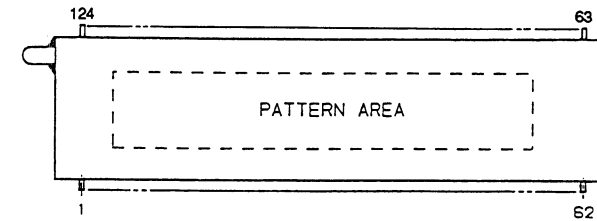
NOTE: Screws adjacent to ▼ mark on product are used for disassembly.

4. FL INFORMATION

■ AAV7014 (DISPLAY ASSY : V901)

● **FL Tube**

- Pin Assignment



- **Pin Connection**

PIN NO.	2243	1222	1222	1220	1118	1118	1117	1116	1115	1114	1113	1112	1111
CONNECTION	F11	F11	F11	N11	P98	P98	P78	P68	P58	P43	P38	P28	P18

[illegible]

PIN NO.	55	55	55	55	55	55	56	56
	12	33	44	55	66	77	88	99
CONNECTION	P	P	P	P	P	P	N	F
	33	33	33	22	22	22	N	F
	32	10	09	88	77	66	N	F
	A A	A A	A A	A A	A A	A P	P 2	2 2

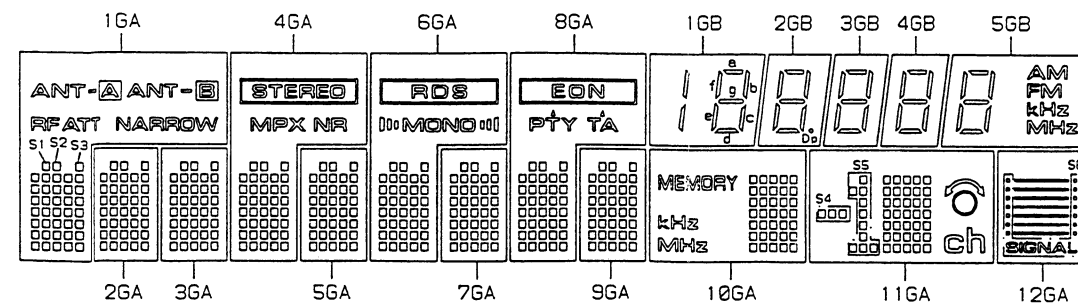
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NOTE 1) F1,F2 --- Filament
      2) NP ----- No pin
      3) NX ----- No extend pin
      4) NC ----- No connection
      5) DL ----- Datum Line
      6) 1GA~12GA, 1GB~5GB --- Grid
      7) IC ----- Internal connection


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- **Grid Assignment**



1-1	2-1	3-1	4-1	5-1
1-2	2-2	3-2	4-2	5-2
1-3	2-3	3-3	4-3	5-3
1-4	2-4	3-4	4-4	5-4
1-5	2-5	3-5	4-5	5-5
1-6	2-6	3-6	4-6	5-6
1-7	2-7	3-7	4-7	5-7

(1GA~11GA)



 (12GA)

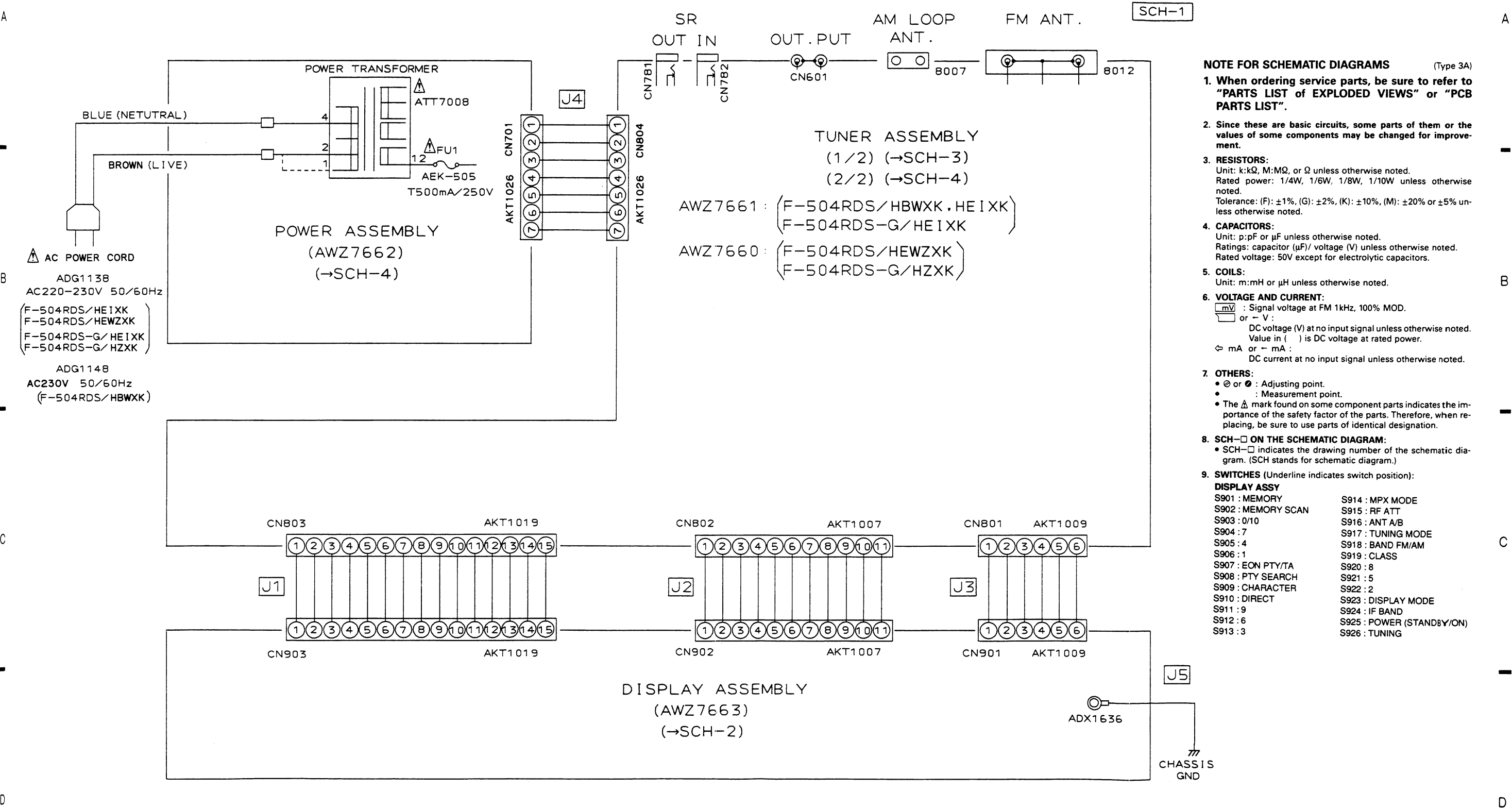
- **Anode Connection**

	5GB	4GB	3GB	2GB	1GB
P1B	a	a	a	a	a
P2B	b	b	b	b	b
P3B	c	c	c	c	c
P4B	d	d	d	d	d
P5B	e	e	e	e	e
P6B	f	f	f	f	f
P7B	g	g	g	g	g
P8B	AM MHz	-	-	Dp	1
P9B	FM MHz	-	-	-	-

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5. SCHEMATIC AND PCB CONNECTION DIAGRAMS

5.1 OVERALL SCHEMATIC DIAGRAM



SCH-1

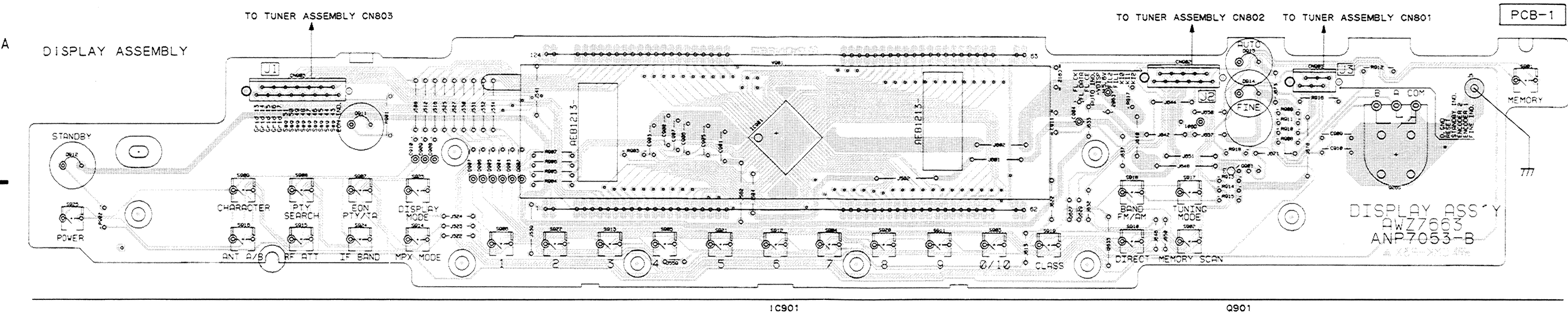
OVERALL SCHEMATIC DIAGRAM

OVERALL SCHEMATIC DIAGRAM

SCH-1

5.2 DISPLAY ASSEMBLY

● This diagram is viewed from the mounted parts side.



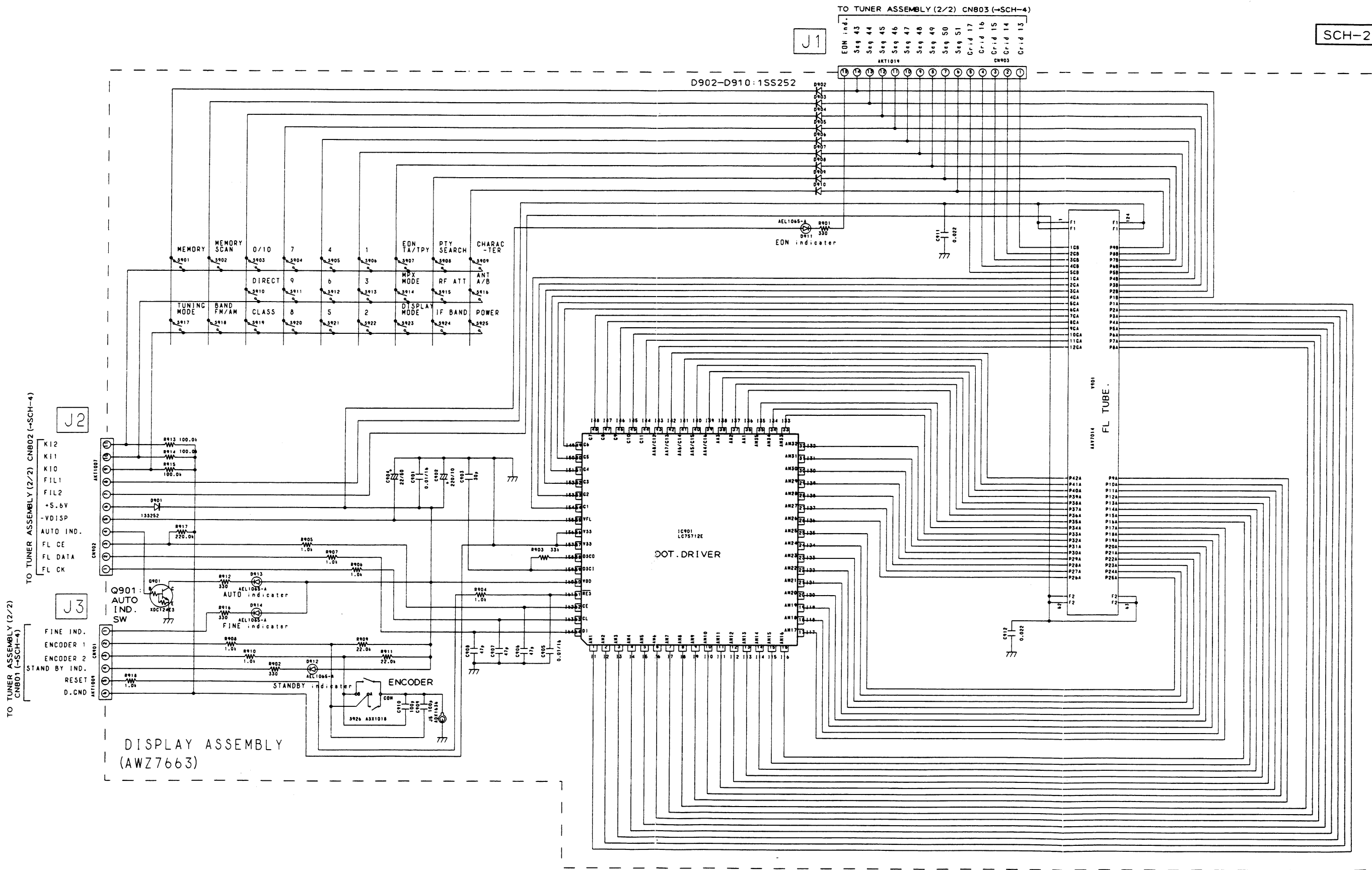
NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
 Q504	 Q504	Transistor
 D203	 D203	Diode
 C513	 C513	Capacitor (Polarized)

3. The transistor terminal marked with E or shows the emitter.
4. The diode terminal marked with or shows cathode side.
5. The capacitor terminal marked with or shows negative terminal.
6. The parts mounted on each PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

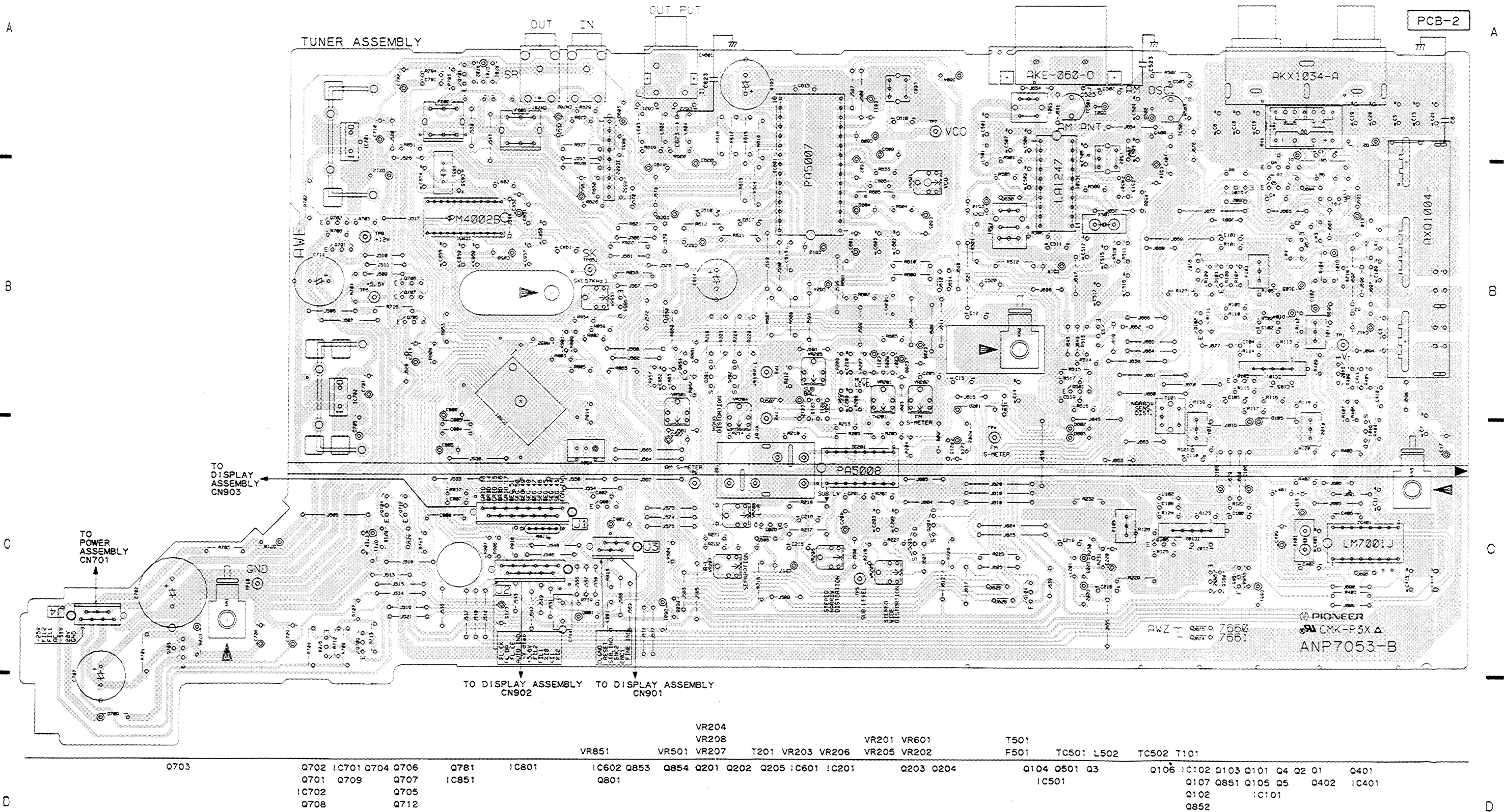
SCH-2



SCH-2

SCH-2

● This diagram is viewed from the mounted parts side.



5.4 TUNER (2/2) AND POWER ASSEMBLIES

A

B

C

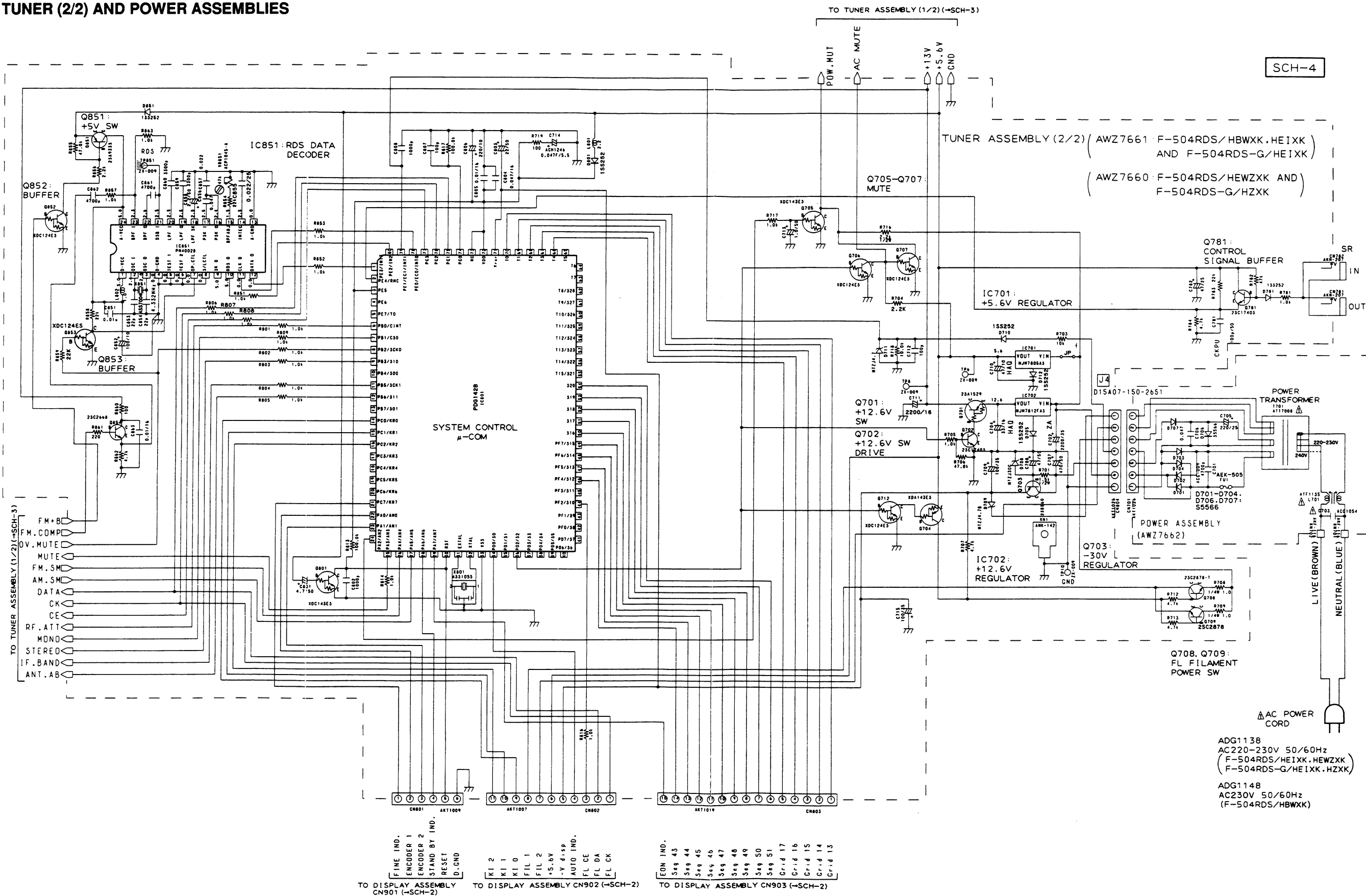
D

A

B

C

D



SCH-4

TUNER ASSEMBLY (2/2) (AWZ7661 F-504RDS/HBWXX, HEIXK)
(AWZ7660 F-504RDS/HEWZXX AND F-504RDS-G/HZXX)

IC701: +5.6V REGULATOR

Q701: +12.6V SW

Q702: +12.6V SW DRIVE

IC702: +12.6V REGULATOR

Q703: -30V L REGULATOR

POWER ASSEMBLY (AWZ7662)

POWER TRANSFORMER

Q708, Q709: FL FILAMENT POWER SW

AC POWER CORD

ADG1138
AC220-230V 50/60Hz
(F-504RDS/HEIXK, HEWZXX)
(F-504RDS-G/HEIXK, HZXX)

ADG1148
AC230V 50/60Hz
(F-504RDS/HBWXX)

TO DISPLAY ASSEMBLY CN901 (-SCH-2) J3

TO DISPLAY ASSEMBLY CN902 (-SCH-2) J2

TO DISPLAY ASSEMBLY CN903 (-SCH-2) J1

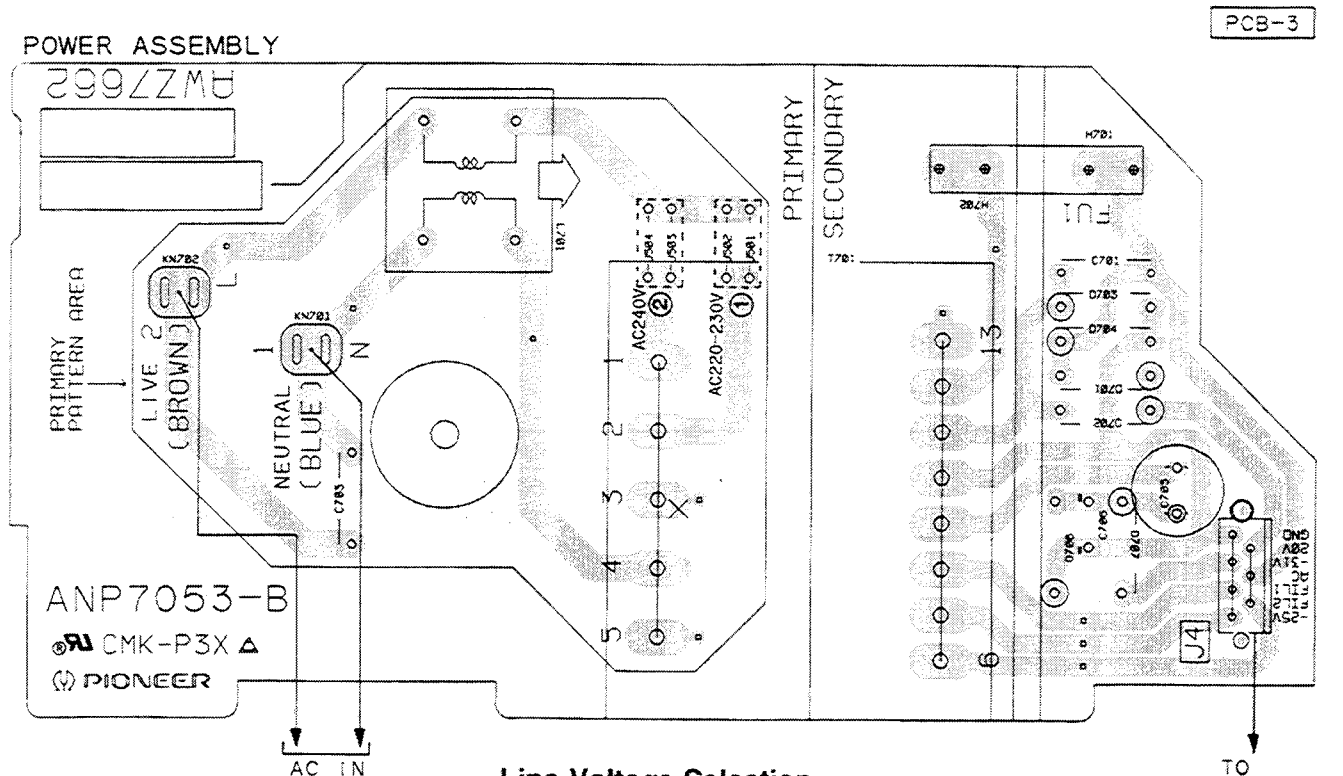
TUNER (2/2) ASSY, POWER ASSY

TUNER (2/2) ASSY, POWER ASSY

SCH-4

SCH-4

● This diagram is viewed from the mounted parts side.



Line Voltage Selection

Line Voltage can be changed by the following modification:

1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the position of the jumper-lines ① follows.

Voltage	jumper—line ① position
220V—230V	①
240V	②

NOTE: When replacing a PCB which has the primary winding circuit of Power-transformer, be sure to compare its circuit with the diagram in Service Manual. jumper-lines on the PCB may have to be removed. Forgetting this check-up will cause a serious damage.

4. Stick a line voltage label on the rear panel.

Part No.	Description
AAX—193	220V label
AAX—192	240V label

TO
TUNER
ASSEMBLY
CN804

6. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560 Ω \rightarrow 56 $\times 10^1$ \rightarrow 561 RD1/8PM $\boxed{561}J$
 47k Ω \rightarrow 47 $\times 10^3$ \rightarrow 473 RD1/4PS $\boxed{473}J$
 0.5 Ω \rightarrow 0R5 RN2H $\boxed{0R5}K$
 1 Ω \rightarrow 010 RS1P $\boxed{010}K$

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω \rightarrow 562 $\times 10^1$ \rightarrow 5621 RN1/4PC $\boxed{5621}F$

■ LIST OF WHOLE PCB ASSEMBLIES

Mark	PCB Assemblies	Part No.					Remarks
		F-504RDS/ HBWXK	F-504RDS/ HEIXK	F-504RDS/ HEWZK	F-504RDS-G/ HZKX	F-504RDS-G/ HEIXK	
NSP	TUNER assembly	AWE7014	AWE7014	AWE7013	AWE7013	AWE7014	
	— TUNER assembly	AWZ7661	AWZ7661	AWZ7660	AWZ7660	AWZ7661	
NSP	— POWER assembly	AWZ7662	AWZ7662	AWZ7662	AWZ7662	AWZ7662	
	— DISPLAY assembly	AWZ7663	AWZ7663	AWZ7663	AWZ7663	AWZ7663	

■ CONTRAST OF PCB ASSEMBLIES

TUNER ASSEMBLY

AWZ7661 and AWZ7660 have the same construction for the following:

Mark	Symbol & Description	Part No.		Remarks
		AWZ7661	AWZ7660	
	R219, R220	RD1/8PM113J	RD1/8PM332J	
	R223, R224	RD1/8PM243J	RD1/8PM222J	
	R607, R608	RDR1/4PM333J	RDR1/4PM223J	
	R609, R610	RD1/8PM243J	RD1/8PM183J	

■ PARTS LIST FOR F-504RDS/HBWX1K

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
TUNER ASSEMBLY				Δ	Q1, Q701		2SA1529
SEMICONDUCTORS					Q851		2SA933S
	IC501	LA1247			Q703		2SB560
	IC401	LM7001J			Q107, Q2, Q501, Q702, Q781		2SC1740S
	IC701	NJM7805AS			Q402		2SC1740SLN
	IC702	NJM7812FAS			Q103, Q105, Q106, Q854		2SC2668
	IC601	PA5007			Q4		2SC2705
	IC201	PA5008			Q708, Q709		2SC2878
	IC801	PDG142B			Q201, Q202		2SK117
	IC851	PM4002B			Q203 - Q205, Q401		2SK246
	IC101, IC102	TA7060AP			Q101, Q102, Q3, Q704		XDA143ES
	IC602	UPC4570HA			Q706, Q707, Q712, Q852, Q853		XDC124ES
					Q104, Q705, Q801		XDC143ES
					D1, D103, D104, D107, D108		1SS252
					D201, D601 - D605, D705, D710		1SS252

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	D712,D781,D801,D851		1SS252		C607		CEAS6R8M50
	D101,D102,D105,D106		1SS85		C704		CEHAQ330M16
	D2		1SV156		C710		CEHAQ470M10
	D202,D203		MA700A		C619,C620,C627,C628		CEZA100M50
	D708		MTZJ30C		C204,C212		CEZA101M16
	D711		MTZJ4.7		C616		CEZA102M16
	D709		MTZJ4.7B		C614		CEZA221M16
	D501,D502		SVC321C2/D2-SP		C702		CEZA222M35
	TH201,TH601		TH103-2		C602		CFTXA473J50
					C507,C512,C8		CKDYB102K50
COILS AND FILTERS					C603		CKDYB152K50
	T501		ATB-095		C859,C860		CKDYB332K50
	L502		ATB7005		C621,C622,C861,C862		CKDYB472K50
	T101		ATE-063		C1,C105,C106,C11,C110		CKDYX103M25
	T201		ATE-068		C15,C16,C18-C21		CKDYX103M25
	F101		ATF-109		C218,C219,C411,C5,C501		CKDYX103M25
	F501		ATF1042		C509,C515,C517,C6,C623		CKDYX103M25
	F102,F105		ATF1094		C7		CKDYX103M25
	F103,F104		ATF1134		C516		CKDYX104M25
	F601,F602		ATF1143		C101,C102,C502,C505,C506		CKDYX223M25
	L601		ATM1003		C511,C523,C855,C857		CKDYX223M25
	L602,L802		LAU010K		C103,C107,C109,C12-C14		CKDYX473M25
	L201,L603,L604		LAU100K		C202,C203,C508,C856		CKDYX473M25
	L1,L102,L401,L801		LAU2R2K		C209,C210		CKMYB181K50
	L501		LAU470K		C712,C781,C807		CKPUYB101K50
SWITCHES AND RELAYS					C802,C808,C9		CKPUYB102K50
	RY1		ASR1043		C804		CKPUYF473Z16
CAPACITORS					C104,C108,C2,C201,C205		CKPUYY103M16
	C410 (0.22μF/50V)		ACE7001		C207,C213,C3,C4		CKPUYY103M16
	C606 (390pF/50V)		ACG-023		C406,C407,C519,C521,C613		CKPUYY103M16
	C714		ACH1246		C615,C805,C851,C863		CKPUYY103M16
	TC501,TC502		ACM-015		C617,C618		CQMA152J50
	C401		CCCCH120J50		C503		CQPA431J100
	C402		CCCCH180J50		C610		CQPA682J100
	C504		CCDUJ070D50	RESISTORS			
	C216		CCDCH150J50		R701		RD1/2PM152J
	C853,C854		CCDCH220J50		R716		RD1/2PM222J
	C215		CCDCH330J50		R708,R709		RD1/4PM010J
	C414,C415		CCDSL101J50		R512		RD1/4PM151J
	C408		CCPUSL470J50		R504		RD1/4PM331J
	C412		CEANL010M50		R2		RD1/4PM751J
	C520		CEANP0R1M50		R627,R628		RDR1/4PM112J
	C17,C206,C214,C217,C220		CEAS010M50		R621,R622		RDR1/4PM332J
	C713		CEAS010M50		R607,R608,R611,R612		RDR1/4PM333J
	C208		CEAS0R1M50		R617,R618		RDR1/4PM561J
	C10,C522,C605,C608,C609		CEAS100M50		R605		RN1/4PC5601F
	C852		CEAS101M10		R5		RS1PMF221J
	C709,C715		CEAS101M35		VR203 (220Ω,0.1W)		ACP103B
	C604		CEAS1R5M50		VR204 (1kΩ,0.1W)		ACP104O
	C601,C611,C624,C803		CEAS220M50		VR601 (2.2kΩ,0.1W)		ACP104I
	C806		CEAS221M10		VR207,VR208 (4.7kΩ,0.1W)		ACP1042
	C711		CEAS222M16		VR201,VR206 (10kΩ,0.1W)		ACP1043
	C858		CEAS2R2M50		VR205,VR501 (22kΩ,0.1W)		ACP1044
	C409		CEAS330M25		VR851 (47kΩ,0.1W)		ACP1045
	C413,C510,C518,C612,C782		CEAS470M25		VR202 (100kΩ,0.1W)		ACP1046
	C708		CEAS470M50				
	C707		CEAS471M50				
	C211,C513,C514,C801		CEAS4R7M50				
					Other Resistors		RD1/8PM□□□J

Mark	No.	Description	Parts No.
------	-----	-------------	-----------

OTHERS

		SCREW	ABA-298
CN601		2P PIN JACK	AKB7010
		TERMINAL 2-P	AKE-060
CN781,CN782		JACK	AKN-207
		CABLE HOLDER	AKT1007
		SOCKET	AKX1034
X401		CRYSTAL RESONATOR (7.200MHz)	ASS1042
X801		CERAMIC RESONATOR (7.70MHz)	ASS1055
X851		CRYSTAL RESONATOR (4.332MHz)	ASS7004
X501		CERAMIC RESONATOR (450kHz)	ATF1027

4 SERIAL F.E. MODULE ASSY AXQ1004

Note: 4 serial F.E. module assy has no service part.

POWER ASSEMBLY
SEMICONDUCTORS

D701-D704,D706,D707	S5566
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COILS AND FILTERS

△ L701 (180μH)	ATF1135
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TRANSFORMERS

△ T701	ATT7008
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CAPACITORS

C701 (0.047μF,25V)	ACG-009
△ C703 (0.01μF,400A)	ACG1054
C705	CEAS221M25
C706	CKDYF473Z50

DISPLAY ASSEMBLY
SEMICONDUCTORS

IC901	LC75712E
Q901	XDC124ES
D901-D910	1SS252
D911-D914	AEL1065

SWITCHES AND RELAYS

S901-S925	ASG1029
S926	ASX1018

CAPACITORS

C903	CCPUSL300J50
C906-C908	CCPUSL470J50
C904	CEAS220M50
C902	CEJA221M10
C911,C912	CKDYF223Z50
C909,C910	CKPUYB101K50
C901,C905	CKPUYY103M16

RESISTORS

All Resistors	RD1/8PM□□□J
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OTHERS

V901	FL TUBE	AAV7014
	CABLE HOLDER	AKT1007

7. ADJUSTMENTS

7.1 FM TUNER ADJUSTMENTS

- Connect the wiring as shown in Fig. 2.
- Set the function to FM BAND.

Step No.	Adjustment title	FM SG (1 kHz \pm 75 kHz dev.)			FL display, IF BAND etc.	Adjustment Location	Specifications
		Frequency (MHz)	Modulation	Level (dB μ V)			
1	T meter adjustment	99	MONO	60	99 MHz NORMAL	T201-B	Adjust so that the voltage between TP2 and TP3 becomes 0 ± 50 mV.
2	MONO distortion adjustment	99	MONO	60	99 MHz NORMAL	T201-A VR204	Adjust so that the distortion becomes minimum.
3	SUB-balance adjustment	99	MONO	60	99 MHz NORMAL	VR203	Adjust so that the AC voltage at TP5 becomes minimum.
4	VCO adjustment	108	OFF	60	108MHz NORMAL	VR601	Adjust so that the output at TP 7 becomes 38 kHz \pm 100Hz.
5	STEREO distortion adjustment (NORMAL)	89(*2)	L-ONLY	60	89 MHz NORMAL	VR205	Adjust so that the distortion becomes minimum.
6	STEREO distortion adjustment (NARROW)	89(*2)	L-ONLY	60	89 MHz NARROW	VR206	Adjust so that the distortion becomes minimum.
7	STEREO distortion adjustment (NARROW)	89(*2)	L-ONLY	60	89 MHz NARROW	T101	Adjust so that the distortion becomes minimum.
8	Repeat steps 6 and 7 until optimum adjustment is obtained.						
9	Separation adjustment	89(*2)	R-ONLY	60	89 MHz NORMAL	VR207	Adjust so that the separation R \rightarrow L becomes maximum.
10			L-ONLY	60	89 MHz NORMAL	VR208	Adjust so that the separation L \rightarrow R becomes maximum.
11	S meter adjustment	89	MONO	84	99MHz NORMAL	VR202	Adjust so that the voltage between TP4 and GND becomes 4.95 ± 0.05 V.
12	Muting level adjustment	99	MONO	12	99 MHz NORMAL	VR201	Adjust so that the muting is released at the input level shown on the left.
13	SK level adjustment	88	EXTERNAL *1 (RDS SG)	60	88 MHz NORMAL (ATT ON)	VR851	Adjust so that the voltage between TP851 and GND becomes maximum.

*1 : RDS SG (AUDIO, PILOT, RDS, BK and DK : OFF, SK : ON)

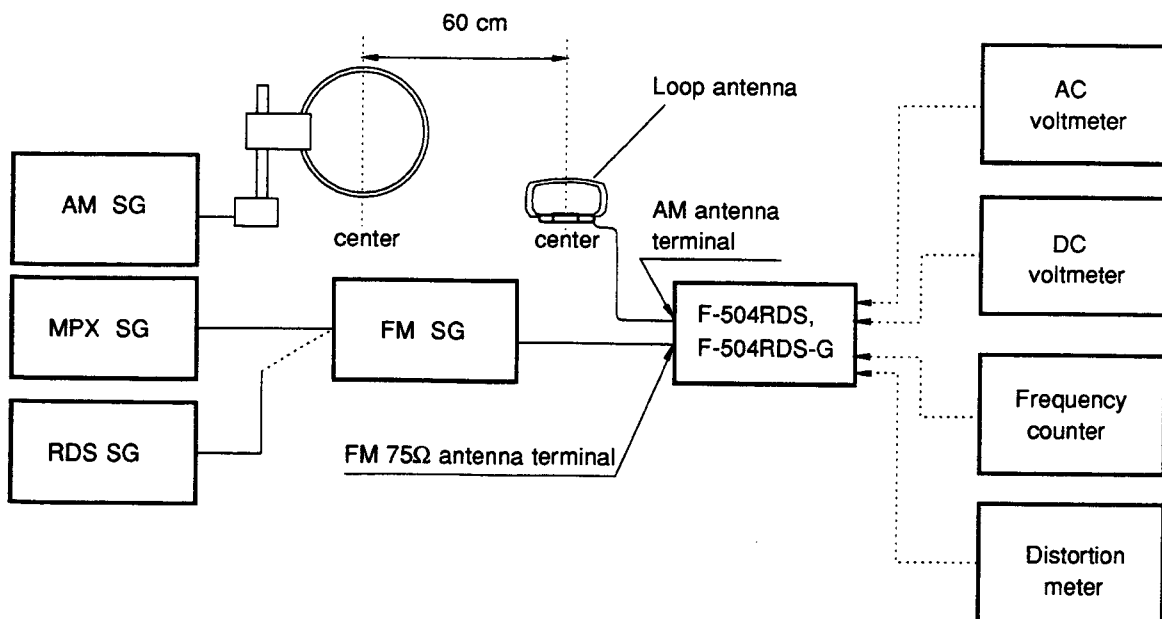
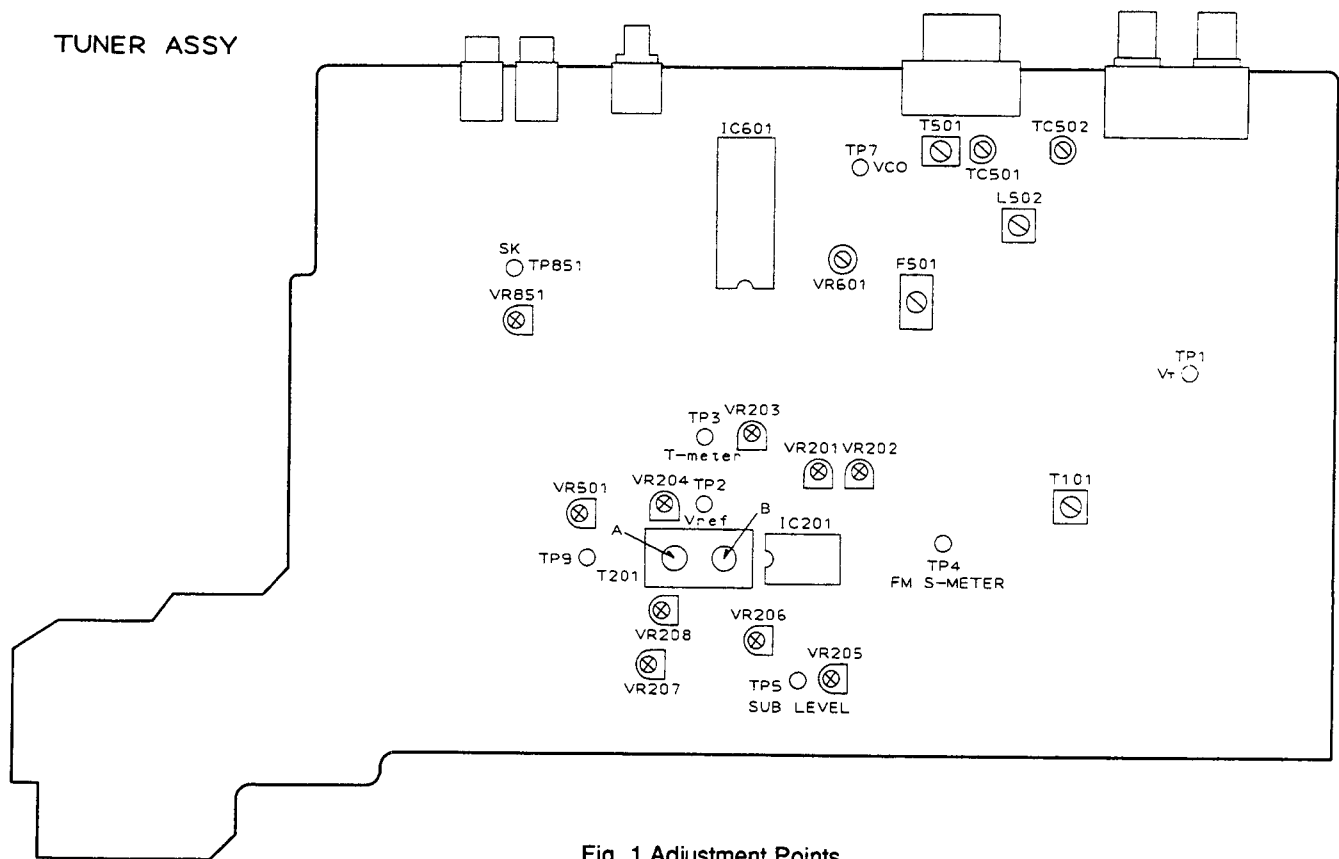
*2 : Stereo modulation : Main 1 kHz L+R, ± 68.25 kHz.

Pilot 19 kHz, ± 6.75 kHz.

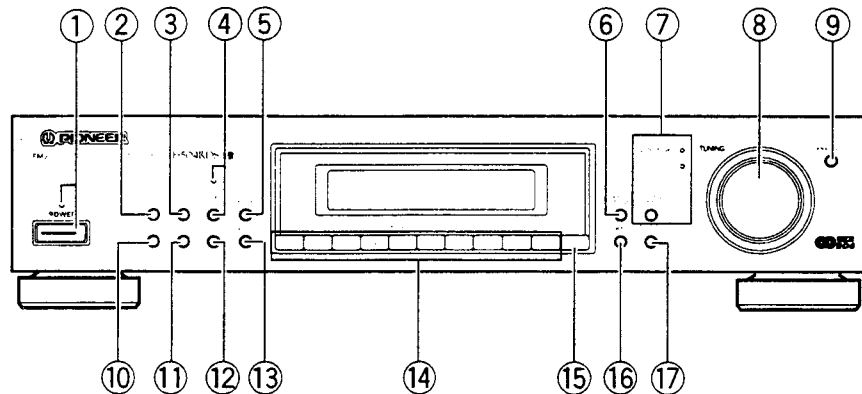
7.2 AM TUNER ADJUSTMENT

- Connect the wiring as shown in Fig. 2.
- Set the function to AM BAND.

Step No.	Adjustment title	AM SG(400kHz, 30% modulation)		FL Display	Adjustment Location	Specifications
		Frequency(kHz)	Level(dBμV/m)			
1	Front-end VT adjustment	NO INPUT SIGNAL		531 kHz	L502	Adjust so that the voltage between TP1 and GND becomes 1.25±0.1 V.
2				1602 kHz	TC502	Adjust so that the voltage between TP1 and GND becomes 10±0.3 V.
3	Front-end sensitivity-up adjustment	603	Low input level	603 kHz	T501	Adjust so that the voltage between TP9 and GND becomes maximum.
4		1395		1395 kHz	TC501	
5	Repeat steps 3 and 4 until optimum adjustment is obtained.					
6	IFT adjustment	603	Low input level	603 kHz	F501	Adjust so that the voltage between TP9 and GND becomes maximum.
7	S meter adjustment	1008	100	1008 kHz	VR501	Adjust so that the voltage between TP9 and GND becomes 4.4±0.1 V.



8. PANEL FACILITIES



① POWER (STANDBY/ON) switch/indicator

This is the switch for electric power.

ON When set to ON position, power is supplied and the unit becomes operational.

STANDBY When set to STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness. During standby, the STANDBY indicator lights up.

NOTE:

- The memory will be backed up so long as the power cord is unplugged.
- If the power cord is unplugged, the memory will be retained for several days.
- When not using the unit for a long period, disconnect the power cord.

② CHARACTER button

Press this button, "CHARACTER" is displayed, and the mode switches to manual station name input.

③ PTY SEARCH button

Press this button, "SEARCH" is displayed, and the mode switches to program type search.

④ EON PTY/TA button/indicator

If receiving a station broadcasting EON information, the radio can automatically keep track of broadcast information from other network stations. The EON indicator lights up when (TA) or (PTY) is specified.

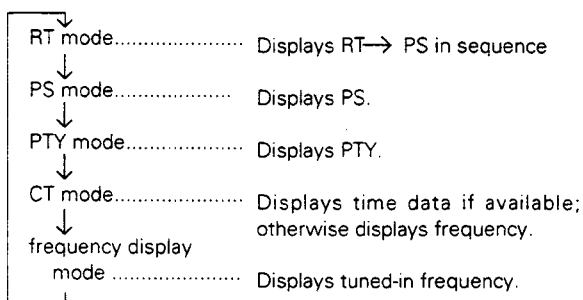
If you specify traffic information (TA) or program type (PTY) beforehand, the frequency will change automatically when the specified program begins.

The **[EON]** indicator of the display section lights up when EON information is received.

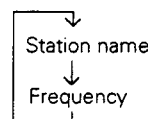
The TA/PTY characters of the display section and EON indicator blink when the specified (TA) or (PTY) broadcast is received.

⑤ DISPLAY MODE button

Each time you press this button, the mode changes as follows:



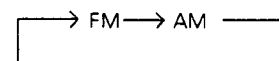
When receiving AM, valid only when the station name is memorized.



Does not show other displays. When no station name is memorized, the DISPLAY MODE button becomes invalid.

⑥ BAND FM/AM selector button

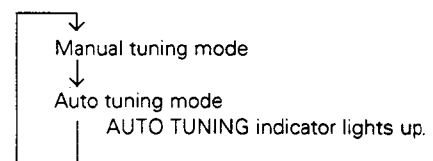
Each time you press this button, the band changes as follows:



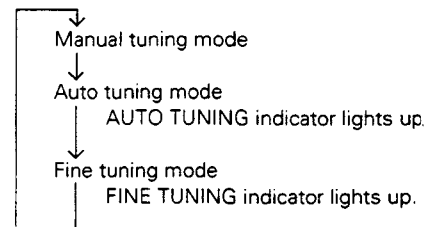
⑦ TUNING MODE button and AUTO TUNING • FINE TUNING indicators

Each time you press this button, the TUNING knob's function changes as follows.

AM:



FM:



NOTE:

- Switching to AM from the FM fine tuning mode will result in the manual tuning mode.
- These two indicators show the frequency mode changed to when the TUNING knob is rotated.

FRONT PANEL FACILITIES

⑧ TUNING knob

Use for tuning. To raise the frequency, turn in a clockwise direction; to lower the frequency, turn counterclockwise.

AM : Frequency changes in 9kHz steps.

FM : Frequency changes in 50 kHz steps when FINE TUNING is off, and 25 kHz steps when FINE TUNING is on.

In the Station Name input mode, and PTY Search mode and EON PTY MODE, use to select characters and program type.

⑨ MEMORY button

Use to preset stations.

This is also used for FM or AM broadcast manual station name character selection.

⑩ ANT A/B button

Selects between two antennas connected to the FM antenna A and B terminals. [ANT- **A**] or [ANT- **B**] indicator lights up.

NOTE:

This button's status is preset for each station in station memory.

⑪ RF ATT button

Set this button to on when receiving strong FM signals (nearby stations) to reduce sound distortion (RF ATT indicator lights).

Normally, this button should be set to off.

This button does not affect AM reception.

NOTE:

This button's status is preset for each station in station memory.

⑫ IF BAND button

Each time this button is pressed, the bandwidth of the IF circuit switches between "normal" and "narrow" for the FM band.

Set to NARROW in case of interference from other stations.

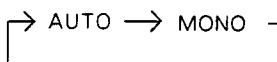
The NARROW indicator lights up. When not lit, normal filter bandwidth is selected.

This button does not affect AM reception.

NOTE:

This button's status is preset for each station in station memory.

⑬ MPX (multiplex) MODE button



This button does not affect AM reception.

AUTO:

" AUTO " is not displayed.

Normally leave in this mode for reception. When a stereo FM broadcast is received, it will be automatically reproduced in stereo sound and the STEREO indicator lights up.

NOTE:

When the signal level is too weak for reception, sound output is automatically muted.

MONO:

MONO indicator lights up.

To receive stereo broadcasts in monaural.

If there is too much noise during stereo reception of a weak signal, you can reduce the level of noise by switching to MONO.

NOTE:

This button's status is preset for each station in station memory.

⑭ STATION CALL buttons

Use these buttons to preset stations and to receive the already preset stations.

These are also used when performing direct access tuning.

⑮ CLASS button

Use to switch between preset memory classes 1 to 4. In each class, 10 stations can be memorized using the STATION CALL buttons, enabling a total of 40 stations to be memorized.

⑯ DIRECT button

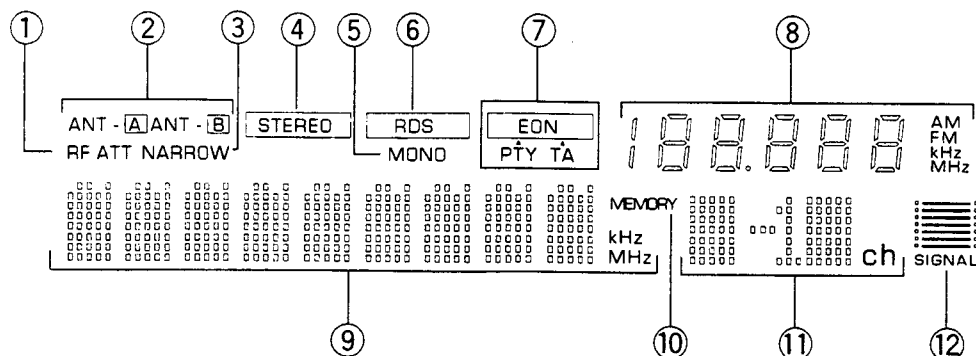
When this button is pressed, the STATION CALL buttons function as ten-key number buttons for direct input of the desired reception frequency. Press again to cancel this mode.

⑰ MEMORY SCAN button

This button is used for station memory scan.

Press to receive currently selected class and preset stations for a few seconds in sequence. Press again, and reception of the station presently begin received will continue.

OPERATING DISPLAY



① RF ATT indicator

Stays lit while RF ATT button is on.

② ANT - **A**, ANT - **B** indicator

This indicates the selected antenna.

③ NARROW indicator

Stays lit while IF BAND button is set to NARROW.

When not lit, stays NORMAL.

FRONT PANEL FACILITIES

④ STEREO indicator

Lights up when a stereo broadcast is received (the indicator does not light when the MPX MODE button is set to MONO).


⑤ MONO indicator

Stays lit while MPX MODE button is set to MONO.

⑥ RDS indicator

Lights when an RDS broadcast is received.

⑦ indicator

When a station broadcasting EON information is received,  lights. After specifying TA or PTY, interrupt waiting begins and the TA or PTY indicator lights.

⑧ Frequency display section

Displays the frequency when the frequency is not displayed at ⑨.

⑨ Character,CT(Clock Time),frequency display section

⑩ MEMORY indicator

⑪ Class and station display section

Shows the class selected by the CLASS button.

The current CLASS is displayed.

When a STATION CALL button is pressed, it will show the corresponding channel number.

⑫ SIGNAL indicator

9. SPECIFICATIONS

FM Tuner Section

Frequency Range	87.5 MHz to 108 MHz
Usable Sensitivity	
NORMAL	Mono: 12.1dBf, IHF(1.1 μ V/75 Ω)
50 dB Quieting Sensitivity	
NORMAL	Mono: 16.2dBf, IHF (1.8 μ V/75 Ω)
Stereo: 36.2dBf, IHF (17.7 μ V/75 Ω)	
Sensitivity (DIN)	
NORMAL	Mono: 0.9 μ V/75 Ω
Stereo: 28 μ V/75 Ω	
Signal-to-Noise Ratio	Mono: 84dB (at 80 dBf)
Stereo: 78 dB (at 80 dBf)	
Signal-to-Noise Ratio (DIN)	Mono: 72dB
Stereo: 65dB	
Distortion (at 80 dBf)	
NORMAL	Mono: 0.06%(1kHz)
Stereo: 0.05%(1kHz)	
NARROW	Mono: 0.2% (1 kHz)
Stereo: 0.2% (1 kHz)	
Alternate Channel Selectivity	
NORMAL	75dB (400 kHz)
NARROW	75dB (300 kHz)
Stereo Separation	65 dB (1 kHz)
Frequency Response	± 1 dB (20 Hz to 15 kHz)
image Response Ratio	80 dB
IF Response Ratio	95 dB
Subcarrier Product Ratio	75 dB
Antenna Input	75 unbalanced

AM Tuner Section

Frequency Range	531 kHz to 1,602 kHz (Step 9 kHz)
Sensitivity (IHF, Loop antenna)	200 μ V/m
Selectivity	40 dB
Signal-to-Noise Ratio	55 dB
Antenna	Loop Antenna

Audio Section

Output (Level/Impedance)	
FM (100 % MOD)	650 mV/0.45k Ω
AM (30 % MOD)	150mV/0.45k Ω

Miscellaneous

Power Requirements	AC 230 Volts, 50/60 Hz
Power Consumption	20W
Dimensions	420 (W) x 85.6 (H) x 340.4 (D) mm
Weight (without package)	3.7 kg

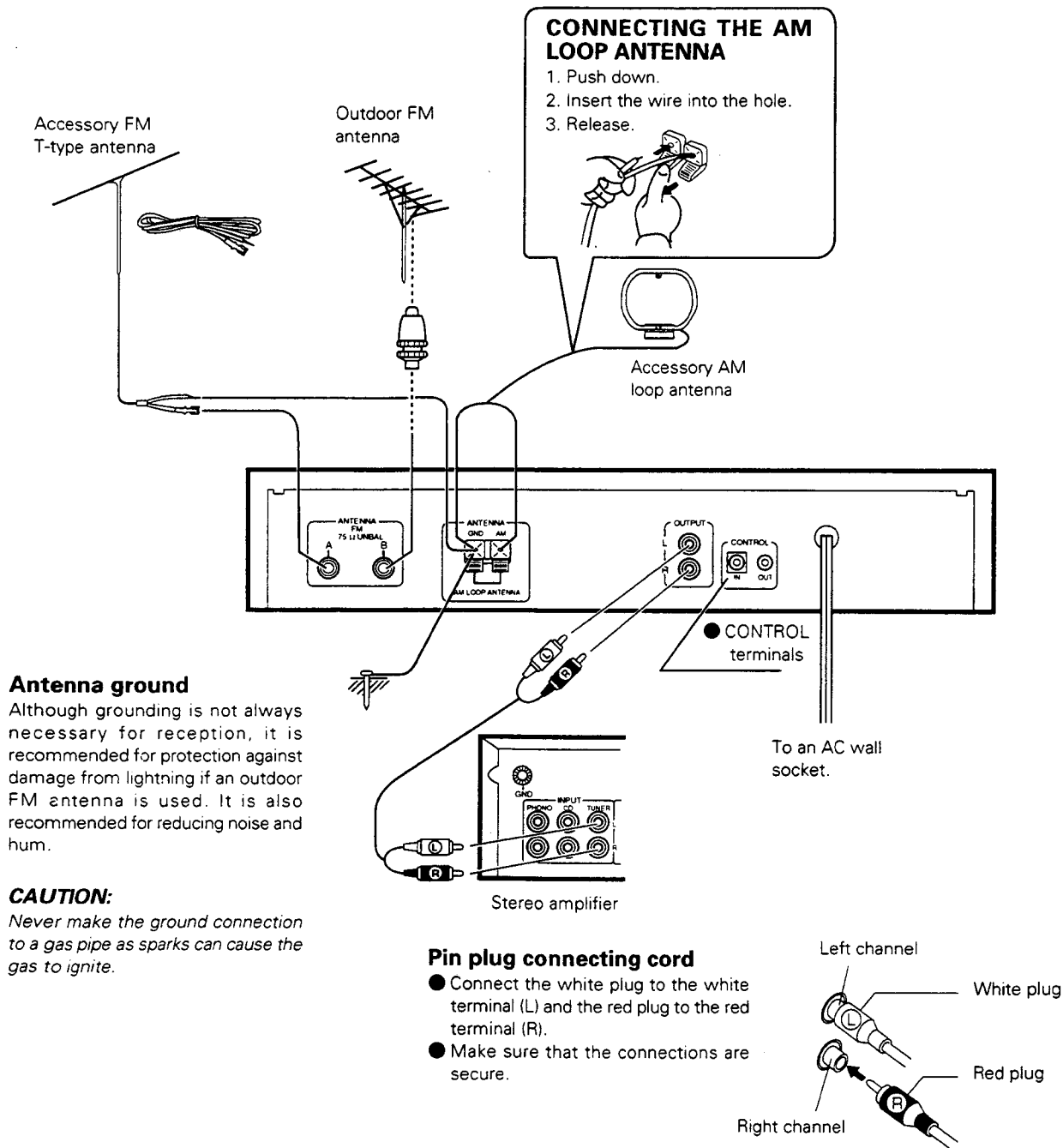
Furnished Parts

FM T-type Antenna	1
AM Loop Antenna	1
Connecting Cord with Pin Plugs	1
Control Cord	1
Operating Instructions	1

NOTE:

Specifications and design are subject to possible modifications without notice, due to improvements.

10. CONNECTIONS



CONTROL Terminals

When using together with a Pioneer component bearing the **SR** mark, connect the CONTROL IN terminal on the rear panel of the tuner to the CONTROL OUT terminal on the component using the supplied control cord. This will enable the tuner to be controlled from a distance with the remote control unit supplied with the component.

When this feature is not used, connection is not necessary.

- For instructions regarding connection and operation, please refer to the operating instruction manual of your stereo component.

